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(71) Applicant (for all designated States except US): MAD-
WARES LTD. [GB/GB]; Vicarage House, 58-60 Kensing-
ton Church Street, London W840B (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): GEORGES, Alain
[FR/FR]; 523 Chemin du Malvan, F-06570 Saint Paul
de Vence (FR). DAMEVSKI, Volt [US/GB]; Vicarage

House, 58-60 Kensington Church Street, London, W840B
(GB). BLAIR, Peter, M. [US/US]; 2864-A Folsom Street,
San Francisco, CA 94110 (US). LAFFITTE, Christian
[FR/FR]; 1, Traverse des Brucs, F-06560 Sophia Antipolis
(FR). WENZINGER, Yves [FR/FR]; 1, Traverse des
Brucs, F-06560 Sophia Antipolis (FR).

(74) Agent: LOUDERMILK, Alan, R.; Loudermilk & Asso-
ciates, P.O. Box 3607, Los Altos, CA 94024-0607 (US).

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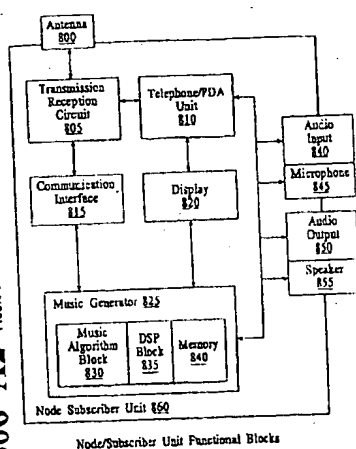
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(54) Title: SYSTEMS AND METHODS FOR PORTABLE AUDIO SYNTHESIS



(57) Abstract: Systems and methods for creating, modifying, interacting with and playing music are provided, particular systems and methods employing a top-down process, where the user is provided with a musical composition that may be modified and interacted with and played and/or stored (for later play). The system preferably is provided in a handheld form factor, and a graphical display is provided to display status information, graphical representations of musical lanes or components which preferably vary in shape as musical parameters and the like are changed for particular instruments or musical components such as a microphone input or audio samples. An interactive auto-composition process preferably is utilized that employs musical rules and preferably a pseudo random number generator, which may also incorporate randomness introduced by timing of user input or the like, the user may then quickly begin creating desirable music in accordance with one or a variety of musical styles, with the user modifying the auto-composed (or previously created) musical composition, either for a real time performance and/or for storing and subsequent playback. In addition, an analysis process flow is described for using pre-existing music as input(s) to an algorithm to derive music rules that may be used as part of a music style in a subsequent auto-composition process. In addition, the present invention makes use of node-based music generation as part of a system and method to broadcast and receive music data files, which are then used to generate and play music. By incorporating the music generation process into a node/subscriber unit, the bandwidth-intensive systems of conventional techniques can be avoided. Consequently, the bandwidth can

preferably be also used of additional features such as node-to-node and node to base music data transmission. The present invention is characterized by the broadcast of relatively small data files that contain various parameters sufficient to describe the music to the node/subscriber music generator. In addition, problems associated with audio synthesis in a portable environment are addressed in the present invention by providing systems and methods for performing audio synthesis in a manner that simplifies design requirements and/or minimizes cost, while still providing quality audio synthesis features targeted for a portable system (e.g., portable telephone). In addition, problems associated with the tradeoff between overall sound quality and memory requirements in a MIDI sound bank are addressed in the present invention by providing systems and methods for a reduced memory size footprint MIDI sound bank.

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